

REMARKS

The Invention.

The present invention is directed to DNA sequences, vectors and cells for enhanced secretion of glycosyltransferases, e.g., sialyltransferase, galactosyltransferase and fucosyltransferase, from filamentous fungi (particularly *Aspergillus*). Surprisingly, the invention may be used to secrete the normally membrane bound glycosyltransferases.

Status of the Application.

Claims 11-18 are pending in the application.

An Information Disclosure Statement is being filed concurrently herewith.

35 U.S.C. §103.

The present invention provides a method for producing glycosyltransferases. Glycosyltransferases are eukaryotic enzymes which are involved in the glycosylation of proteins. They normally reside within the secretory apparatus of the cell and are not normally secreted into the external culture medium. They typically have a transmembrane domain which serves to anchor them to a membrane. Attempts had previously been made to produce glycosyltransferases as secreted proteins but yields had been very low. Thus, the glycosyltransferases represent a specific class of proteins for which there seem to be inherent problems for production of high levels of secreted, soluble, active protein. The present inventive expression strategy involves removal of the transmembrane domain and fusion with the *Aspergillus* secreted glucoamylase. Given the difficulties encountered in producing glycosyltransferases in other systems it was unknown if active glycosyltransferase could be secreted using the inventive method or if the enzyme would be active and stable in the *Aspergillus* culture supernatant.

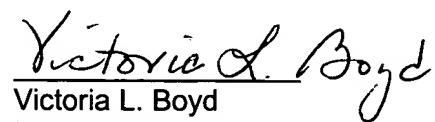
CONCLUSION

In light of the above amendments, as well as the remarks, the Applicants believe the pending claims are in condition for allowance and issuance of a formal Notice of Allowance at an early date is respectfully requested. If a telephone conference would

expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (650) 846-7615.

Respectfully submitted,

Date: 4-23-03


Victoria L. Boyd
Victoria L. Boyd
Registration No. 43,510

Genencor International, Inc.
925 Page Mill Road
Palo Alto, CA 94304
Tel: 650-846-7615
Fax: 650-845-6504